Remarks

Claim Amendments

The claims have been amended to better define what applicants regard as the invention. The term "vulcanizable" has been deleted from claims 11 through 14 to remove the unnecessary limitation. Claims 15 through 20 have been amended to correct the typographically error in the term "splice" to --spliced--.

Rejection Under 35 U.S.C. Section 103

Claims 11-20 are rejected under 35 U.S.C. Section 103 as being unpatentable over WO 00/53952 (WO '952) in view of Botzman et al., U.S. Patent No. 4,898,223 (Botzman '223). This rejection is traversed.

Initially, it is noted that WO '952 and Botzman '223 are both fully disclosed either in the specification as filed or in the Information Disclosure Statement and Form 1449 filed with the specification.

WO '952 teaches a method of splicing a conveyor belt (entire disclosure) and Botzman '223 teaches a rubber composition useful in various applications including a conveyor belt (Column 2, Lines 51 through 56, and Column 4, Lines 39 through 47). WO '952 teaches nothing regarding the composition of the rubber in a splice. Botzman '223 teaches a rubber composition that requires the use of 20 to 40 parts of a methacrylate grafted cis 1,4-polyisoprene, along with polyoctenamer and natural or synthetic rubber.

Applicants assert that a prima facie case of obviousness has not been established. No motivation to combine the references exists, since Botzman '223 teaches away from such a combination and such a modification would destroy the intended function of the teaching in Botzman '223. Further, such a combination would not result in the present claims.

No Motivation to Combine the References

Applicants urge that no motivation exists to combine the references for two reasons: first, Botzman '223 teaches away from such a combination, and second, the proposed

modification would destroy the intended purpose of Botzman '223. Since no motivation to combine the references exists, a prima facie case of obviousness has not been established.

First, while WO '952 teaches a method of splicing a conveyor belt, and Botzman '223 teaches a rubber composition useful in a conveyor belt, neither reference teaches or suggests a conveyor belt having at least one spliced joint as recited in the present claims. As recited in the present claims, the conveyor belt comprises at least one spliced joint, said spliced joint comprising a plurality of steel strands and a vulcanizable rubber composition applied to said steel strands, said vulcanizable rubber composition comprising 100 parts by weight of rubber, said rubber comprising from about 1 to about 40 parts by weight of polyoctenamer. Thus, one skilled in the art would expect that the rubber composition applied to the steel strands in the spliced joint should show adequate compatibility with the steel strands to obtain a useful spliced joint. One measure of this compatibility is the level of adhesion observed between the steel and the rubber composition, as illustrated in the Example on pages 14-15 of the present specification, where it is shown that a rubber composition including polyoctenamer shows better adhesion to steel than a rubber composition without polyoctenamer. By contrast, Botzman '223 teaches that a rubber composition including polyoctenamer shows inferior adhesion to itself as compared to a rubber composition not containing polyoctenamer (Example I, Tables 1 and 2). Upon reading Botzman '223, then, one skilled in the art would be led to expect that a rubber composition including polyoctenamer would not be suitable for use in a spliced joint of a conveyor belt. Botzman '223 therefore teaches away from the use of polyoctenamer in a rubber composition for a conveyor belt spliced joint, and one skilled in the art would not be motivated to combine the teachings of Botzman '223 and WO '952. Applicants urge that a prima facie case of obviousness has not been established.

Second, Botzman '223 further teaches that the presence of the polyoctenamer in the rubber composition including a methacrylate grafted cis 1,4 polyisoprene "enable[s] the preparation of components of manufactured articles such as tires and industrial products

utilizing the aforesaid graft polymer which was heretofore observed to be reasonably possible, if at all, only with some difficulty because of processing problems." (Column 4, Lines 44 through 38, emphasis added) The present invention, by contrast, does not utilize the graft polymer required by Botzman '223, and a combination of Botzman '223 with WO '952 to arrive at the present claims would suggest removal of the graft polymer from the rubber composition of Botzman '223. Without the graft polymer, the intended function of the polyoctenamer in Botzman '223 is destroyed, i.e., there would be no longer be need to process the graft polymer. As the intended function of the polyoctenamer in the rubber composition of Botzman '223 would be destroyed by such a modification, no motivation exists to combine these references. Applicants urge that a prima facie case of obviousness has not been established.

Proposed Combination Does Not Result in Present Claims

Applicants urge that, even if combined, the combination of WO '952 and Botzman '223 does not result in the present claims. Botzman '223 requires the use of a methacrylate grafted cis 1,4-polyisoprene in their rubber composition, while the present claims do not. In order to arrive at the present claims upon reading Botzman '223 and WO '952, one skilled in the art would have to be motivated to remove the methacrylate grafted cis 1,4-polyisoprene from the rubber composition of Botzmann '223, and then be motivated to use the modified rubber composition in the splice of WO '952. Nowhere does Botzman '223 nor WO '952 teach that the methacrylate grafted cis 1,4-polyisoprene should be removed from the rubber composition; in fact, as mentioned previously herein, the very reason for including the polyoctenamer in the rubber composition of Botzman '223 is to enable the processing of the otherwise unprocessable methacrylate grafted cis 1,4-polyisoprene. Applicants urge that the proposed combination would not, therefore, result in the present claims. Applicants urge that a prima facie case of obviousness has not been established.

Unexpected Results

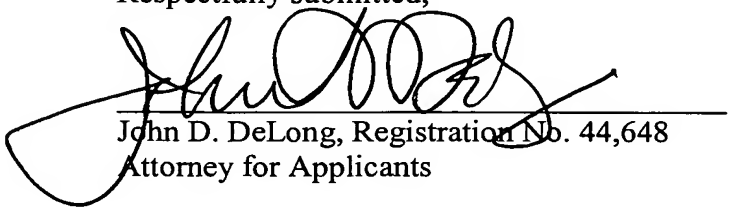
Applicants urge that with regard to claims 18 through 20, even if a prima facie case of

obviousness exists, the present specification includes a showing of unexpected results sufficient to overcome any prima facie obviousness for claims 18 through 20. As recited in claims 18, 19, and 20, the method of the present invention results in a conveyor belt spliced joint that shows unexpectedly superior dynamic adhesion values as compared with spliced joints made with rubber compositions not including the polyoctenamer. Applicants herewith submit, as Attachment A, a copy of Australian Standard AS-1333 as requested by the Examiner. As illustrated in the Example, Samples 2 and 3 showed significantly higher levels of dynamic adhesion than was observed for Sample 1 containing no polyoctenamer. Comparatively, Botzman '223 illustrates inferior adhesion for samples containing polyoctenamer (Example I, tables 1 and 2). Applicants urge that the values of dynamic adhesion illustrated in the Example and recited in claims 18, 19 and 20 are highly significant, surprising and unexpected and distinguish the performance of spliced joints of the present invention over prior art spliced joints. In fact, Sample 3 shows an excess of four-fold increase over Sample 1 in the dynamic adhesion. As indicated at Page 3, Lines 13 through 18, commercial steel reinforced conveyor belts are rated according to their splice strength expressed as dynamic adhesion cycles to failure. Applicants urge that claims 18, 19 and 20 are independently patentable over the cited art.

Conclusion

Based on the foregoing, Applicants believe the claims are now in condition for allowance.

Respectfully submitted,



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